KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session: 2023-2024 Summer

Discipline: **Civil Engineering**	**Semester:**4th	**Name of the Teaching Faculty:** **Ananyashree Moharana** **(Lecturer)** **Mail.id ananya.moharanafce@kp.kiit.ac.in**
Subject: Hydraulics & Irrigation engineering (Th-2)	**No. Of Days/Week:5**	**Start Date: 16/1/2024** **End Date: 26/4/2024**
Week	**Class Day**	**Theory/Practical Topics**
1st	1st	Introduction
	2nd	Properties of fluid: density, specific gravity, surface tension
	3rd	Capillarity, viscosity and their uses
	4th	Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure
	5th	Absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure
2nd	1st	Gauge pressure; pressure head; pressure gauges.
	2nd	Assignment evaluation
	3rd	Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface
	4th	KINEMATICS OF FLUID FLOW: 2.1 Basic equation of fluid flow and their application: Rate of discharge,
	5th	Equation of continuity of liquid flow, total energy of a liquid in motion
3rd	1st	Potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.
	2nd	Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs

	3rd	Discharge through different types of notches and weirs-their application
	4th	Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
	5th	Losses of head of a liquid flowing through pipes: Different types of major and minor losses
4th	1st	Simple numerical problems on losses due to friction using Darcy's equation
	2nd	Total energy lines & hydraulic gradient lines
	3rd	Flow through the Open Channels: Types of channel sections- rectangular,
	4th	trapezoidal and circular, discharge formulae- Chezy's and Manning's equation
	5th	Best economical section.
5th	1st	Assignment evaluation, doubt clear
	2nd	Quiz test
	3rd	Type of pumps
	4th	Centrifugal pump: basic principles, operation, discharge
	5th	Assignment evaluation
6th	1st	horse power & efficiency
	2nd	Reciprocating pumps: types, operation, discharge,
	3rd	Horse power & efficiency
	4th	Assignment evaluation,
	5th	Revise class
7th	1st	Hydrology Cycle , Rainfall: types
	2nd	intensity, hyetograph
	3rd	Estimation of rainfall, rain gauges, Its types(
	4th	Concept of catchment area, types, run-off,
	5th	Estimation of flood discharge by Dicken's and Ryve's formulae
8th	1st	Assignment evaluation
	2nd	Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	3rd	Crop season ,Duty, Delta and base period
	4th	Relationship, overlap allowance, kharif and rabi crops
	5th	Gross command area, culturable command area,

9th	1st	Intensity of Irrigation,
	2nd	Time factor, crop ratio
	3rd	Irrigable area,
	4th	Canal irrigation, types of canals,
	5th	loss of water in canals
10th	1st	Perennial irrigation
	2nd	Different components of irrigation canals
	3rd	Their functions
	4th	Sketches of different canal cross-sections
	5th	Classification of canals according to their alignment
11th	1st	Various types of canal lining
	2nd	Advantages and disadvantages
	3rd	Assignment evaluation
	4th	WATER LOGGING AND DRAINAGE : Causes and effects of water logging, detection
	5th	Prevention and remedies
12th	1st	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives
	2nd	Weirs and barrages, General layout, functions of different parts of barrage
	3rd	Silting and scouring , Functions of regulatory structures
	4th	Functions and necessity of Cross drainage works
	5th	Aqueduct, siphon
13th	1st	Super passage, level crossing
	2nd	Concept of each with help of neat sketch
	3rd	Quiz Test
	4th	Doubt clearing
	5th	*Different types of reservoir*
14th	1st	Necessity of storage reservoirs
	2nd	Types of dams
	3rd	Earthen dams: types, description
	4th	Causes of failure
	5th	Protection measures
15th	1st	Gravity dam- types, description

	2nd	Causes of failure
	3rd	Protection measures
	4th	Spillways- Types (With Sketch)
	5th	Necessity of spill way

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